CBCS SCHEME

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BME405D

Fourth Semester B.E./B.Tech. Degree Examination, June/July 2026
Robotics and Automation

ACHARYA INSTITUTE OF TECHNOLOGY LIBRARY BANGALORE

Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

		Module – 1	M	L	C
Q.1	a.	Define Industrial Automation. Explain different types of automation.	8	L2	CO1
	b.	Explain different levels of automation system.	8	L2	CO1
	c.	List the advantages and disadvantages of automation system.	4	L2	CO1
		OR			
Q.2	a.	What is an industrial robot? Briefly explain common robot configurations with sketch.	8	L2	CO1
	b.	Explain the following : i) Degrees of Freedom (DoF) ii) Asimov's laws of robotics.	8	L2	CO1
	c.	Briefly explain origin of robotics.	4	L2	CO1
		Module – 2			
Q.3	a.	Explain anatomy of robot with sketch.	8	L2	CO2
	b.	Explain work volume, accuracy and repeatability of robot.	8	L2	CO2
	c.	Explain robot end effector briefly.	4	L2	CO2
		OR			
Q.4	a.	Explain three types of robot drive systems.	10	L2	CO2
	b.	List different types of controllers employed for robot control. Explain P – I – D controllers briefly.	10	L2	CO2
		Module – 3			
Q.5	a.	List different types of mechanical grippers. Explain any two with sketch.	10	L2	CO3
	b.	Explain the selection and design consideration of grippers in robots.	10	L2	CO3

		OR			
Q.6	**a.**	Differentiate between Transducers and Sensors.	**8**	**L2**	**CO3**
	b.	Explain the principle and working of tactile sensor.	**8**	**L2**	**CO3**
	c.	List different uses of sensors in robotics.	**4**	**L2**	**CO3**
		Module – 4			
Q.7	**a.**	Explain different robot programming methods.	**10**	**L2**	**CO4**
	b.	Explain two types of robot lead – through programming methods.	**10**	**L2**	**CO4**
		OR			
Q.8	**a.**	Explain the requirements of good programming languages.	**10**	**L2**	**CO4**
	b.	Explain the capabilities and limitations of lead – through methods.	**10**	**L2**	**CO4**
		Module – 5			
Q.9	**a.**	Briefly explain material handling and material transport systems.	**10**	**L2**	**CO5**
	b.	Explain principles and design considerations in material handling technologies.	**10**	**L2**	**CO5**
		OR			
Q.10	**a.**	Explain any two types of storage systems.	**10**	**L2**	**CO5**
	b.	List different types of automatic identification methods. Explain any two.	**10**	**L2**	**CO5**

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